

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW  
OF THE STATE OF MONTANA

In the matter of the ) NOTICE OF AMENDMENT AND  
amendment of ARM 17.30.702 ) ADOPTION  
and the adoption of new rule )  
I pertaining to defining )  
nutrient reducing subsurface ) (WATER QUALITY)  
wastewater treatment systems )

TO: All Concerned Persons

1. On February 26, 2004, the Board of Environmental Review published MAR Notice No. 17-206 regarding a notice of public hearing on the proposed amendment and adoption of the above-stated rules at page 387, 2004 Montana Administrative Register, issue number 4.

2. The Board has amended ARM 17.30.702 and adopted new rule I (ARM 17.30.718) as proposed, but with the following changes, deleted matter interlined, new matter underlined:

17.30.702 DEFINITIONS (1) through (8) remain as proposed.

(9) "Level 1a treatment" means a subsurface wastewater treatment system (SWTS) that:

(a) remains as proposed.

(b) discharges a total nitrogen effluent concentration of greater than 24 mg/L, but not greater than 30 mg/L. The term does not include treatment systems for industrial waste.

A level 1a designation allows the use of 30 mg/L nitrate (as N) as the nitrate effluent concentration for mixing zone calculations.

(10) "Level 1b treatment" means a SWTS that:

(a) remains as proposed.

(b) discharges a total nitrogen effluent concentration of greater than 30 mg/L, but not greater than 40 mg/L. The term does not include treatment systems for industrial waste.

A level 1b designation allows the use of 40 mg/L nitrate (as N) as the nitrate effluent concentration for mixing zone calculations.

(11) through (26)(b) remain as proposed.

NEW RULE I (17.30.718) CRITERIA FOR NUTRIENT REDUCTION FROM SUBSURFACE WASTEWATER TREATMENT SYSTEM (SWTS) (1) through (7) remain as proposed.

(8) All SWTSs classified as a level 1a, level 1b, or level 2 must have an operation and maintenance (O&M) contract  
Montana Administrative Register 17-206

in perpetuity for each system installed. The O&M contract will be required in the subdivision approval, or as a deed restriction if a subdivision plat approval is not required for the property. O&M must be conducted by the system manufacturer, an approved vendor, or other qualified personnel. The SWTS vendor or manufacturer must offer an O&M plan that meets the requirements of this section and the requirements in department Circular DEQ-4. At a minimum, the O&M contract must include:

(a) remains as proposed.

(b) annual effluent sampling and analysis for nitrate (as N), nitrite (as N), ammonia (as N), TKN (as N), BOD, TSS, fecal coliform, specific conductance and temperature. Effluent sampling must be conducted after all treatment is complete, but before discharge to the absorption area. All monitoring data collected from a type of SWTS may be requested by the department if the department has reason to believe that a type of SWTS that has been approved as a nutrient-reducing system is not meeting the required treatment efficiencies.

(9) All SWTSs classified as level 1a, level 1b, or level 2 must have the following features:

(a) a visual and/or audible alarm warning that indicates if a hydraulic malfunction is occurring in any portion of the treatment system (prior to the absorption system) is failing to provide the designated level of treatment; and

(b) a physical barrier that prevents the discharge of wastewater to the absorption system if a hydraulic malfunction is occurring in any portion of the treatment system (prior to the absorption system) is failing to provide the designated level of treatment; and

~~(c) a backflow prevention device installed between the house or facility and the septic tank to prevent sewage from entering the structure.~~

3. The following comments were received and appear with the Board's responses:

COMMENT NO. 1: New rule I(9)(a) requires an alarm that warns that the treatment system is failing to provide the designated level of treatment. To meet the letter of this rule would require complex monitoring equipment that would actually measure the system effluent for nitrogen concentration. This equipment may not exist for small systems and operation and maintenance of such equipment is not feasible for owners of small systems. The Department has indicated verbally that the intent of this rule was to provide an alarm if the system is not functioning properly hydraulically. It is very reasonable to provide alarms that

would indicate if a pump is not operating and most, if not all, of these systems employ one or more pumps in the system.

This requirement should be reworded to indicate the intent.

RESPONSE: The intent of new rule I(9)(a) was to provide the visual and/or audible alarm when there is a hydraulic malfunction of the treatment system. The most common malfunction would likely be a non-operational pump in the system. It would be prohibitively expensive, due to equipment and maintenance costs, to install a water quality monitor in the treatment system that monitors nitrogen concentrations in the effluent. In response to this comment the rule language will be modified to clarify that the purpose of the alarm is to detect hydraulic failure.

COMMENT NO. 2: New Rule I(9)(b) requires that a physical barrier be provided that prevents discharge to the absorption system if any portion of the treatment system is failing to provide the designated level of treatment. Again, this would require difficult monitoring. The Department has indicated verbally that the intent was to make sure that the treatment system could not be simply by-passed if it was not working. This should be reworded to indicate the intent.

RESPONSE: The intent of new rule I(9)(b) was to prevent a by-pass of wastewater to the drainfield if there was a hydraulic malfunction in the treatment system. In response to this comment the rule language will be modified to clarify that intent.

COMMENT NO. 3: New rule I(9)(c) requires a backflow prevention device. The commentor is not aware of any such devices that are routinely used for raw sewage. Many devices are available for potable water, but the solids in raw sewage would render these devices unusable. In addition, such a device does not serve any purpose. The system will not back up into the house unless the flow into the system exceeds the flow out of the system. If there is a system failure that prevents flow out of the system, an alarm should be provided.

However, closing a valve to prevent more water into the system doesn't stop the system from backing up. It actually backs up quicker, because if the line from the house to the septic tank is suddenly closed, this line simply fills up with sewage and backs up into the house. Backflow preventers are typically used where the pressure on the downstream side of the system can exceed the pressure on the upstream side, under adverse conditions. In these systems, that is not possible. This subsection of the rule should be deleted.

RESPONSE: As the comment notes, the proposed requirement in new rule I(9)(c) would likely create a greater chance that

sewage could back-up into a residence, which is what the rule section was originally trying to prevent. Based on the comment new rule I(9)(c) will be removed. Removal of (9)(c) will not create a situation where sewage backing up into residences occurs any more frequently than with wastewater systems approved under the current rules and design circulars.

COMMENT NO. 4: Backflow prevention devices should not be required between the facility and the septic tank for nitrogen removal treatment systems as they do not present any greater likelihood of backing up into a residence than any other traditional septic systems. Backflow prevention is extremely atypical on building sewers due to the high likelihood of clogging. Any check-type backflow preventer would have to be installed in a manhole or similar vault to allow access for frequent cleaning. Septic systems using gravity flow drainfields, other pumped septic/drainfield individual systems, and municipal sewage collection systems do not require backflow prevention devices on building sewers because the maintenance requirements and potential for clogging outweigh the benefit of not having sewage backing up in the facility.

RESPONSE: See response to Comment No. 3.

COMMENT NO. 5: The following sentence should be added to the end of ARM 17.30.702(9)(b): "A Level 1a designation allows the use of 30 mg/l nitrate-N as the nitrates in effluent concentration for nitrate sensitivity analysis."

RESPONSE: The suggested language clarifies the proposed rule by specifying the exact nitrate concentration for level 1a systems that can be used in mixing zone calculations. In response to the comment the suggested language, with some editorial changes, has been added to the proposed rule as shown above.

COMMENT NO. 6: The following sentence should be added to the end of ARM 17.30.702(10)(b): "A Level 1b designation allows the use of 40 mg/l nitrate-N as the nitrates in effluent concentration for nitrate sensitivity analysis."

RESPONSE: The suggested language clarifies the proposed rule by specifying the exact nitrate concentration for level 1b systems that can be used in mixing zone calculations. In response to the comment the suggested language, with some editorial changes, has been added to the proposed rule as shown above.

COMMENT NO. 7: Because most nitrogen-reducing wastewater treatment systems are biological systems, they are easily upset by radical changes in wastewater flow or quality. New

rule I(8) must be strengthened significantly in order to ensure adequate operation, maintenance and performance of advanced treatment systems. Section (8) calls for an operation and maintenance contract to be required in the subdivision approval or a deed restriction. However, it is clear that the Department will have little or no ability to enforce this requirement following subdivision approval. Maintenance contracts can and will be cancelled or ignored by individual homeowners faced with the cost of maintaining these systems.

RESPONSE: The comment is correct that the Department does not have the enforcement resources to ensure, for the life of each installed system, compliance with the requirement to have a viable O&M contract. However, the inclusion of the requirement in a subdivision approval or deed restriction makes the requirement a matter of public record. Under existing law, a copy of the subdivision approval must be given to every purchaser of property in a subdivision. Consequently, property owners in subdivisions should receive notice of the requirement and of the potential for enforcement action for violations. At a minimum, an owner's interest in having a properly functioning system will provide an incentive for keeping the contract current. Awareness of potential enforcement actions should create an additional incentive for compliance. The proposed rule will have benefits even if the Department cannot guarantee full compliance.

COMMENT NO. 8: A city-county health department is not comfortable approving significant numbers of these systems above a sole source aquifer unless the systems are managed by a competent wastewater operator under the jurisdiction of a sewer and water district, special improvement district or local government with adequate financial resources to conduct operation, maintenance and replacement of systems. Leaving the operation and maintenance of these advanced treatment systems up to an individual homeowner or even a homeowners' association is a recipe for failure. The commentor has experienced multiple cases of failed operation and maintenance of conventional gravity septic tank/drainfield systems in the county. It is unrealistic to expect homeowners to adequately manage advanced treatment systems. Sewer districts, special improvement districts and local governments could provide the financial resources and management structure necessary to insure reliable operation, maintenance and performance.

RESPONSE: The comment requests that all subdivided lots proposing to use a nitrogen-reducing wastewater treatment system should be required to be part of a sewer district, special improvement district or under the authority of local

government. If new rule I included such a requirement, it would limit the use of nitrogen-reducing systems to larger subdivisions or to areas of higher density where such management entities are practical. If specific counties want to require special districts for the use of nitrogen-reducing systems, they may adopt those requirements under their authority in 50-2-116(1)(i), MCA. The Department believes it is not necessary to have such a requirement statewide, because it would place unnecessary restrictions on the use of nitrogen-reducing wastewater systems in many areas within the state. The requirement for a viable O&M contract with the vendor will help ensure that systems are properly maintained.

COMMENT NO. 9: A significant concern with the use of advanced treatment systems is the inability to ensure their performance over a long period of time. The only way to really know if the system is performing as expected is to monitor influent and effluent quality and then make adjustments to optimize performance when monitoring results do not indicate adequate performance. Although new rule I(8)(b) would require annual effluent sampling to ensure performance, influent quality should also be sampled to ensure performance.

RESPONSE: Monitoring the influent quality of the wastewater can be useful in diagnosing treatment system problems when the effluent quality is outside the anticipated range. However, to keep operation costs reasonable for homeowners, new rule I does not require influent monitoring. It is anticipated that the vendors who administer the operation and maintenance agreements and conduct the annual effluent monitoring will collect influent samples to identify problems as they arise. The Department believes that mandatory influent sampling is not necessary and is only warranted to help solve inadequate treatment problems as those problems occur.

COMMENT NO. 10: New rule I should also require that the results of the sampling be submitted to DEQ for review. What happens if the system does not perform as expected or required?

RESPONSE: The commentor requests that all required annual monitoring results be submitted to the Department. This would require the Department to operate and maintain a database for logging results, entering data, checking data against requirements, and enforcing monitoring results submission.

New rule I requires annual operation and maintenance and annual monitoring to promote proper operation of these wastewater systems. It is in the vendors'/manufacturers'

interest to maintain these systems properly. If the systems have frequent breakdowns or do not treat properly, the vendors/manufacturers risk losing new clients and risk losing nitrogen reduction certification from the Department. New rule I(2)(f) includes a provision to ensure that only reliable vendors/manufacturers are certified for distributing nitrogen-reducing systems. The Department believes the rule provides sufficient safeguards to ensure the large majority of treatment systems will be operated and maintained properly. However, in response to comments, the rule will be modified to clarify that the Department can request monitoring results if the Department has reason to believe the SWTS is not meeting required efficiencies. See Response to Comment No. 11.

COMMENT NO. 11: These rules should provide DEQ with the authority to require the system to be modified, upgraded or replaced with a system that will achieve the level of nitrogen removal required.

RESPONSE: Under the Water Quality Act (75-5-605, MCA), the Department has the authority to require replacement of a wastewater system that is not operating properly and causing degradation or pollution of state waters. The commentor proposes language that does not require the Department to demonstrate that degradation or pollution is being caused by a malfunctioning treatment system, just that the system is not operating properly. The proposed revision to the rule would not be supported by existing statutes. However, the Department has amended new rule I(8)(b), as shown above, to include a provision that allows the Department to request all monitoring data collected from previously approved systems. That data can then be used by the Department to determine if the existing systems are meeting the nitrate removal efficiency that they are approved for. If the systems are not performing adequately the Department may rescind the nitrate-reducing classification as provided for in (7) of new rule I.

COMMENT NO. 12: If DEQ approves the use of these systems in a subdivision to comply with the nondegradation provisions of the Montana Water Quality Act, it must ensure that the systems will perform for as long as they are operated. If DEQ does not ensure adequate long-term performance and maintenance of these systems, then it is very likely that water quality degradation or violation of the nitrate groundwater standard will occur in subdivisions that use these advanced treatment systems.

RESPONSE: See response to Comment No. 11.

Reviewed by:

BOARD OF ENVIRONMENTAL REVIEW

Montana Administrative Register 17-206

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JAMES M. MADDEN	JOSEPH W. RUSSELL, M.P.H.
Rule Reviewer	Chairman

Certified to the Secretary of State, \_\_\_\_\_, 2004.